

Appl. No. 10/006,419
Amendment Dated July 15, 2004
Reply to Office Action of March 15, 2004

In the Claims:

Claim 1 (Currently Amended). A synthetic resin-impregnated body, comprising:

a primary product formed of an expanded or at least partially recompressed expanded graphite having a liquid-accessible open pore system;

said graphite containing primary product being impregnated with at least one of:

at least one solvent-free, low viscosity, storage stable, polymerizable acrylic resin system; and

polymers obtained by curing said at least one resin system.

Claim 2 (Original). The synthetic resin-impregnated body according to claim 1, wherein said at least one acrylic resin system contains triethyleneglycol dimethacrylate and at least one initiator system.

Claim 3 (Original). The synthetic resin-impregnated body according to claim 2, wherein said at least one acrylic resin system contains azo initiators as said at least one initiator.

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Claim 4 (Original). The synthetic resin-impregnated body according to claim 3, wherein said azo initiators contained in said at least one acrylic resin system are selected from the group consisting of 2,2'-dimethyl-2,2'-azodipropiononitrile, 1,1'-azobis(1-cyclohexanecarbonitrile) and azoisobutyric acid dinitrile.

Claim 5 (Original). The synthetic resin-impregnated body according to claim 1, wherein said at least one acrylic resin system has a storage stability at room temperature of more than two days.

Claim 6 (Original). The synthetic resin-impregnated body according to claim 1, wherein said at least one acrylic resin system has a storage stability at room temperature of more than two weeks.

Claim 7 (Original). The synthetic resin-impregnated body according to claim 1, including up to 50% by weight of acrylic resin.

Claim 8 (Original). The synthetic resin-impregnated body according to claim 1, including 5 to 25% by weight of acrylic resin.

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Claim 9 (Original). The synthetic resin-impregnated body according to claim 1, including 10 to 20% by weight of acrylic resin.

Claim 10 (Currently Amended). The A synthetic resin-impregnated body ~~according to claim 1, wherein a,~~ comprising:

a primary product formed of an expanded or at least partially recompressed expanded graphite having a liquid-accessible open pore system, said primary product contains containing fillers selected from the group consisting of ceramic fillers, mineral fillers, electrically non-conductive fillers, and electrically conductive fillers;

said primary product being impregnated with at least one of:

at least one solvent-free polymerizable acrylic resin system, and

polymers obtained by curing said at least one resin system.

Claim 11 (Currently Amended). The synthetic resin-impregnated body according to claim 1, including at least two independently held together networks, one of said networks being formed of a connected framework made of expanded or

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expanded and thereafter at least partially recompressed graphite ~~with good electrical conductivity as well as good thermal conductivity that is thermally conductive and has an electrical volume resistance from 0.10 to 0.77 mΩ~~, and the other of said networks being a connected network made of synthetic material having penetrated into said graphite.

Claim 12 (Currently Amended). The synthetic resin-impregnated body according to claim 1, including a surface, regions close to said surface, and another a remaining part, said at least one acrylic resin system disposed only in one of said remaining part and said regions.

Claim 13 (Original). The synthetic resin-impregnated body according to claim 1, wherein a continuous resin surface film is not present and the body is electrically conductively contactable.

Claim 14 (Currently Amended). A process for producing a body containing at least one synthetic resin, which comprises:

providing a primary product made formed of expanded or at least partially recompressed expanded graphite ~~with an open having a liquid-accessible~~ pore system;

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impregnating the primary product with at least one solvent-free, low viscosity, storage-stable, polymerizable acrylic resin system to form a resin-containing, uncured intermediate product; and

finally subjecting the resin-containing, uncured intermediate product to a curing treatment for the at least one resin system.

Claim 15 (Original). The process for producing a body containing at least one synthetic resin according to claim 14, which further comprises processing the resin-containing, uncured intermediate product to form a shaped body; and carrying out the subjecting step by subjecting the uncured shaped body produced from the uncured intermediate product to a curing treatment for the at least one resin system.

Claim 16 (Original). The process for producing a body containing at least one synthetic resin according to claim 15, which further comprises simultaneously shaping the acrylic resin-containing body and curing the resin system that is present as a result of temperature impact.

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Claim 17 (Currently Amended). The A process for producing a body containing at least one synthetic resin according to claim 16, which further comprises:

providing a primary product formed of expanded or at least partially recompressed expanded graphite having a liquid-accessible pore system;

providing limiting an ash value to not more than four percent of the primary product made of expanded or at least partially recompressed expanded graphite having an open pore system, with an ash value of not more than four per cent;

impregnating the primary product with at least one solvent-free polymerizable acrylic resin system to form a resin-containing, uncured intermediate product;

processing the resin-containing, uncured intermediate product to form a shaped body;

finally subjecting the resin-containing, uncured intermediate product to a curing treatment for the at least one resin system;

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carrying out the subjecting step by subjecting the uncured shaped body produced from the uncured intermediate product to a curing treatment for the at least one resin system; and

simultaneously shaping the acrylic resin-containing body and curing the resin system that is present as a result of temperature impact.

Claim 18 (Currently amended). The A process for producing a body containing at least one synthetic resin according to claim 16, which further comprises:

providing a primary product formed of expanded or at least partially recompressed expanded graphite having a liquid-accessible pore system;

providing limiting an ash value to not more than two percent of the primary product made of expanded or at least partially recompressed expanded graphite having an open pore system, with an ash value of not more than two per cent;

impregnating the primary product with at least one solvent-free polymerizable acrylic resin system to form a resin-containing, uncured intermediate product;

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processing the resin-containing, uncured intermediate product
to form a shaped body;

finally subjecting the resin-containing, uncured intermediate
product to a curing treatment for the at least one resin
system;

carrying out the subjecting step by subjecting the uncured
shaped body produced from the uncured intermediate product to
a curing treatment for the at least one resin system; and

simultaneously shaping the acrylic resin-containing body and
curing the resin system that is present as a result of
temperature impact.

Claim 19 (Currently Amended). The process for producing a body containing at least one synthetic resin according to claim 14, which further comprises providing maintaining a bulk density in a range of from 0.1 to 1.8 g/cm³ of the primary product made of expanded or at least partially recompressed expanded graphite having an open pore system, with a bulk density in a range of from 0.1 to 1.8 g/cm³.

Claim 20 (Currently Amended). The process for producing a body containing at least one synthetic resin according to claim 14, which further comprises providing maintaining a bulk

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density in a range of from 0.3 to 1.5 g/cm³ of the primary product made of expanded or at least partially recompressed expanded graphite having an open pore system, ~~with a bulk density in a range of from 0.3 to 1.5 g/cm³.~~

Claim 21 (Currently Amended). The process for producing a body containing at least one synthetic resin according to claim 14, which further comprises providing maintaining a bulk density in a range of from 0.5 to 1.3 g/cm³ of the primary product made of expanded or at least partially recompressed expanded graphite having an open pore system, ~~with a bulk density in a range of from 0.5 to 1.3 g/cm³.~~

Claim 22 (Currently Amended). The process for producing a body containing at least one synthetic resin according to claim 14, ~~which further comprises carrying out wherein~~ the step of impregnating the primary product made of expanded or at least partially recompressed expanded graphite having an open pore system, is performed with acrylic resins having a viscosity at room temperature of less than 100 mPa·s.

Claim 23 (Currently Amended). The process for producing a body containing at least one synthetic resin according to claim 14, ~~which further comprises carrying out wherein~~ the step of impregnating the primary product made of expanded or at least partially recompressed expanded graphite having an

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open pore system, is performed with acrylic resins having a viscosity at room temperature of less than 50 mPa·s.

Claim 24 (Currently Amended). The process for producing a body containing at least one synthetic resin according to claim 14, ~~which further comprises carrying out~~ wherein the step of impregnating the primary product made of expanded or at least partially recompressed expanded graphite having an open pore system, is performed with acrylic resins having a viscosity at room temperature of less than 20 mPa·s.

Claim 25 (Original). The process for producing a body containing at least one synthetic resin according to claim 14, wherein the primary product made of expanded or at least partially recompressed expanded graphite having an open pore system, takes-up up to 100% by weight of its own weight of acrylic resins, during the impregnating step.

Claim 26 (Original). The process for producing a body containing at least one synthetic resin according to claim 14, wherein the primary product made of expanded or at least partially recompressed expanded graphite having an open pore system, takes-up 5 to 35% by weight of its own weight of acrylic resins, during the impregnating step.

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Claim 27 (Original). The process for producing a body containing at least one synthetic resin according to claim 14, wherein the primary product made of expanded or at least partially recompressed expanded graphite having an open pore system, takes-up 10 to 25% by weight of its own weight of acrylic resins, during the impregnating step.

Claim 28 (Currently Amended). The process for producing a body containing at least one synthetic resin according to claim 14, ~~which further comprises carrying out wherein the~~ the step of curing the acrylic resins is performed in less than ten minutes under the effect of temperatures of up to 200°C.

Claim 29 (Currently Amended). The process for producing a body containing at least one synthetic resin according to claim 14, ~~which further comprises carrying out wherein the~~ the step of curing the acrylic resins is performed in less than three minutes under the effect of temperatures of up to 200°C.

Claim 30 (Currently Amended). ~~The A~~ process for producing a body containing at least one synthetic resin according to claim 14, which ~~further comprises:~~

providing a primary product formed of expanded or at least partially recompressed expanded graphite having a liquid-accessible pore system;

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mixing the expanded graphite with fillers selected from the group consisting of ceramic fillers, mineral fillers, electrically non-conductive fillers and electrically conductive fillers;

processing the mixed expanded graphite to form a filler-containing primary product; and

then impregnating the primary product with resin at least one solvent-free polymerizable acrylic resin system to form a resin-containing, uncured intermediate product; and

finally subjecting the resin-containing, uncured intermediate product to a curing treatment for the at least one resin system.

Claim 31 (Currently Amended). A sealing element, comprising:

a synthetic resin-impregnated body having a primary product formed of an expanded or at least partially recompressed expanded graphite and having a liquid-accessible pore system; said graphite containing being impregnated with at least one of:

at least one solvent-free, low-viscosity, storage-stable, polymerizable acrylic resin system; and

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polymers obtained by curing said at least one resin system.

Claim 32 (Currently Amended). A fuel cell component, comprising:

a synthetic resin-impregnated body having formed of an expanded or at least partially recompressed expanded graphite having a liquid-accessible pore system; said graphite containing being impregnated with at least one of:

~~at least one solvent-free, low viscosity, storage stable,~~
polymerizable acrylic resin system; and

polymers obtained by curing said at least one resin system.

Claim 33 (Currently Amended). A heat-conducting element, comprising:

a synthetic resin-impregnated body having a primary product having formed of an expanded or at least partially recompressed expanded graphite having a liquid-accessible open pore system; said graphite containing being impregnated with at least one of:

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at least one solvent-free, low viscosity, storage-stable,
polymerizable acrylic resin system; and

polymers obtained by curing said at least one resin
system.

Claim 34 (New). The sealing element according to claim 31,
having a gas permeability from 0.001 to 0.016 mg/m².s.

Claim 35 (New). A fuel cell using oxygen as an oxidant,
comprising the fuel cell component according to claim 32.